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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/871,976 | 06/04/2001 | Akihiko Hosono | 401225 | 3480 |

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EXAMINER

TRAN, THANH Y

ART UNIT PAPER NUMBER

2841

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,976

Applicant(s)

HOSONO ET AL.

Examiner

Thanh Y. Tran

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 24 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Applicant's arguments with respect to claims 1-2 and 4-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Barton et al (U.S. 6,403,209).

With respect to claim 1, Barton et al discloses a structure (Fig. 13) including a carbon body (comprising element 140) comprising a substrate (80); and a carbon body (140) disposed on the substrate (80) and having a plurality of continuously connected intersecting walls (46) transverse to the substrate (80).

With respect to claim 2, Barton et al discloses a structure (Fig. 13) wherein the continuously connected intersecting walls (46) define perimeters of openings between locations where the continuous connected intersecting walls intersect.

With respect to claim 4, Barton et al discloses a structure (Fig. 13) including a continuous carbon film (140) on the substrate (80) and only partially filling the openings.

With respect to claim 5, figure 14b shows that the carbon body has a hexagonal crystalline structure with a bottom plane parallel to the substrate (80).

With respect to claim 7, Barton et al discloses a structure (Fig. 13) wherein an electrical current can flow between any two points on the carbon body (see col. 15, lines 15-22). It should be noted that, since wall 46 of the carbon body having a sheet of resistance and a breakdown voltage thus there is an electrical current that can flow between any two points on the carbon body.

With respect to claim 8, Barton et al discloses a structure (Fig. 13) wherein the substrate (80) is a glass substrate. It should be noted that: since substrate 80 is made of a non-conductive material, thus it can be considered as a glass substrate (see col. 15, line 35).

With respect to claims 9-11 and 13, process claims 9-11 and 13 are deemed to be inherent upon the reference of Barton et al as applied in claims 1-8 above.

With respect to claim 15, it recites limitations similar to claim 1, Barton et al further discloses an electric field emission electron source (Fig. 13) including: a substrate (80, Fig. 13); and a carbon body (140) on the substrate (80) as an electron emitting member for emitting electrons (see col. 11, lines 5-22), the carbon body (140) comprising a plurality of continuously connected intersecting walls transverse to the substrate (80).

With respect to claim 16, it recites similar limitations to claim 2. Therefore, it is rejected for the same reasons.

With respect to claim 17, Barton et al further discloses an electric field emission electron source (Fig. 13) including a cathode electrode (52) (see col. 1, lines 16-19) for supplying electrons to the carbon body, and an extraction electrode (54) for generating an electric field for inducing emission of electrons from the carbon body (see col. 11, lines 5-22), wherein the carbon body is positioned opposite the cathode electrode (see col.10, lines 16-18), contacting the

cathode electrode, and the extraction electrode (54) is positioned opposite the carbon body without overlapping the carbon body, when viewed in a direction transverse to the substrate (80) (see Fig. 13).

With respect to claim 18, Barton et al further discloses an electric field emission electron source (Fig. 13) including a cathode electrode (52) for supplying electrons to the carbon body, and a backside extraction electrode, positioned at a rear side of the carbon body (140), for generating, from the rear side of the carbon body, an electric field for inducing emission of electrons from the carbon body (see col. 11, lines 5-22), wherein the cathode electrode (52) is positioned opposite the backside extraction electrode (54), and the carbon body is positioned opposite the cathode electrode (52), contacting the cathode electrode.

With respect to claim 19, figure 13 of Barton et al shows that the cathode electrode (52) is located only at a periphery of the carbon body (140).

With respect to claim 20, figure 13 of Barton et al shows that the cathode electrode (52) is positioned outside the backside extraction electrode (54) and not overlapping with the backside extraction electrode (54), when viewed in a direction perpendicular to the substrate (80).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al (U.S. 6,403,209).

With respect to claim 6, Barton et al does not teach using an average thickness of no more than 100 nm for the continuously connected intersecting walls. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use an average thickness of no more than 100 nm for the continuously connected intersecting walls because it has been held by the courts that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (In re Swain et al., 70 USPQ 412). The same reasoning applies to claims 12 and 14 regarding the specific values of the hydrogen and the heat.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

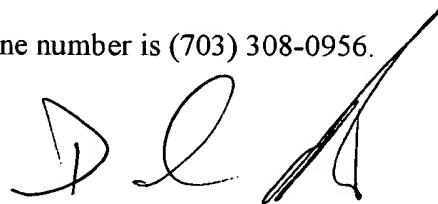
Schueller et al teaches prior art relevant to the invention.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (703) 305-4757. The examiner can normally be reached on Monday through Thursday and every other Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin, can be reached on (703) 308-3121. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'D. Martin', with a long, sweeping horizontal stroke extending to the right.

TYT

DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800